
A CASE OF TRACHEOTOMY FOR MULTIPLE NEOPLASMS OF THE LARYNX.

CLINICAL LECTURE DELIVERED AT JEFFERSON MEDICAL COLLEGE
HOSPITAL.

BY J. SOLIS-COHEN, M.D.,

Honorary Professor of Laryngology, Jefferson Medical College.

[REPRINTED FROM INTERNATIONAL CLINICS, JANUARY, 1892.]

A CASE OF TRACHEOTOMY FOR MULTIPLE NEOPLASMS OF THE LARYNX.

CLINICAL LECTURE DELIVERED AT JEFFERSON MEDICAL COLLEGE HOSPITAL.

BY J. SOLIS-COHEN, M.D.,

Honorary Professor of Laryngology, Jefferson Medical College.

GENTLEMEN,—The case that I bring before you is one which has come with a history of hoarseness culminating in aphonia, and dyspnoea culminating in several attacks of great difficulty in breathing. These suffocative attacks have been relieved by inhalations of chloroform and the subsequent administration of emetics. The patient is, as you see, a spare young man, of dark complexion; his age is twenty-two. You hear the impediment in his breathing; and, as he replies to our questions, you note that his voice is aphonic. He is a patient of my friend, Dr. William L. Williams, of Ridgway, Pa., who brought him to me yesterday with the following clinical history: A machinist by trade, he has long been subject to spells of sore throat insufficient in importance to cause him to solicit professional counsel. For a few months he has been more or less hoarse, and for about four months his voice has been abolished. One month ago he was suddenly seized with a suffocative paroxysm, and was nearly dead when the doctor reached him. Recognizing a spasm of the larynx, the doctor administered vapor of chloroform, which relaxed the spasm. He then accompanied the man home, and life was nearly lost in another paroxysm in transit. Under the use of emetics these paroxysms ceased, and the patient had no further trouble until Sunday last, when another paroxysm of suffocation occurred suddenly without provocation of any kind, and was again relieved by chloroform and emetics.

Yesterday Dr. Williams brought the patient to me, hoping that I could find a solution for the attacks. He had examined the patient laryngoscopically, and had noted great thickenings in the laryngeal mucous membrane. I was at first foiled in disclosing the interior of the larynx, by reason of a great depression of the epiglottis; but, on

raising that structure with a pair of curved forceps, I was able to secure a series of momentary views, which revealed the presence of multiple morbid growths in the interior. There is a swelling of some kind, probably a sessile growth, over the left ventricular band, and there are two flaccid growths on the right vocal band. The terrible suffocative paroxysms described have been doubtless due to an impaction of the tumors between the vocal bands, occluding the glottis and preventing breathing; and this impaction, in its turn, has probably produced a spasm of the larynx. The facts that there have been two very serious paroxysms of difficult breathing threatening asphyxia, and that I have had great difficulty in examining the larynx, which I was unable to do at all without lifting the epiglottis, show me that I cannot safely attempt to take the growths out through the mouth; and I shall, therefore, perform the operation of tracheotomy to render this patient's life safe in case of subsequent paroxysms, and shall insert a tracheotomy-tube to supply air below the obstructions. This will be a prophylactic operation, therefore. After the patient has recovered from his tracheotomy operation,—at the end of ten days, say,—I shall see whether I can remove these growths by the mouth. If I succeed, I shall have them examined under the microscope, and can then tell you what they are. On account of the long continuance of the trouble, I think that they have been there a long time and that they are benign, and, as they are multiple, that they are probably papillomata. Should the growths prove malign, I will bring the patient before you later, and split open the larynx, remove them with forceps, scissors, or sharp spoon, as may be, and then thoroughly scrape the larynx at the points of implantation.

I do not perform this operation under general anæsthesia. It is not necessary. The incision through the skin can be made in a very few seconds, and that is the only painful part of the operation. I have seen deaths from general anæsthesia in cases of occlusion of the larynx. You want the patient to be perfectly conscious, so that when you tell him to cough he can do so, and thus expel any blood which may have passed into his trachea. If he be unconscious, the only thing you can do is to swab the blood out, which is much less satisfactory. Before the introduction of cocaine into practice, I used to have the skin frozen with ice-and-salt, or with sprays of ether of low specific gravity, or of rhigolene. This did very well, but, the parts frozen being hard, we could not perform the operation so readily; besides which, union was often delayed in consequence of the violence done to the nutrition of the tissues.

To-day we shall inject three-fourths of a grain of the hydrochlorate of cocaine on each side of the proposed line of incision, and wait five minutes for it to have its topical anæsthetic effect; and I do not think that there will be any pain produced whatever, even by the incision through the skin.

This case should be an easy one to operate on, as the patient is very thin. I prefer to operate with the patient in the sitting posture, because the parts then preserve the same relative relations that they will occupy while the patient wears his tube. When you operate in the recumbent position, the line of incision through the skin may not be exactly on the same level with the incision behind in the trachea, and, as the skin is elastic, there will be some puckering, although this is not very important. I always try to do these operations during the day, and by full daylight. The reason why many operations are difficult, and sometimes not successful, is simply because the surgeons wait until they are compelled to operate in an emergency to save the patient from suffocating, and so have to operate in a hurry, and often, too, with a poor light. Therefore, when you feel assured that an operation will be imperative, do not temporize, but make arrangements to perform it under the most favorable conditions.

In operating on the trachea you want to make it prominent. Put a support under the neck, but be careful, especially in these cases of morbid growths, not to throw the trachea so far back as to press it against the spinal column and so flatten it as to interfere with the breathing. You should perform the operation strictly in the median line, and unless you are sure of your hand you should mark out the line of incision beforehand. You can open the trachea above or below the thyroid gland, and thus perform either the high or the low operation; the high operation being the easier, as fewer vessels have to be looked out for. I shall perform the low operation. It is more difficult, but it is better for the reason that the artificial orifice is farther away from the disease,—an important point in laryngeal tumors, especially when malignant. Then when such growths are removed and there is recurrence, the wound is not so liable to become implicated. Make your incision in the middle line, and in such a manner that its central point will be at the part where you intend to place your canula. Your incision will be from an inch and a quarter to two inches long.

Standing on the right side of our patient, I commence my incision at the upper border of the cricoid cartilage and carry it down two inches, using a short stumpy scalpel grooved on its back. The skin and superficial fascia having been cut through, I take two pairs of

small conjunctival forceps, giving one pair to an assistant and taking the other myself. Now, lifting up the fascia between us, I divide it layer by layer between the two instruments. I like this method better than using the grooved director, and we shall so continue dividing the fascia layer by layer until we see the white line between the pairs of sterno-hyoid and sterno-thyroid muscles. A few strokes bring the knife between these muscles, and we continue down until we get to the trachea. After separating these muscles by retractors in the hands of two of our assistants, we shall arrest the bleeding, if there be any, before incising the trachea. Ordinary bleeding is stopped with pressure from pieces of ice in a cloth, as we are doing here, or with hot water. Should these fail, we would use ligatures or the forceps. The slight bleeding being restrained, you see here distinctly the isthmus of the thyroid gland in the upper portion of the wound, and below it the trachea, recognizable by its cartilaginous rings. Before incising the trachea, you see that I take a small sharp spoon and scrape away the connective tissue in the middle line to the width of an eighth of an inch on each side of the proposed line of incision. This will prevent emphysema being caused by coughing. Any air escaping by the sides of the tube will not be driven under the connective tissue and skin; for it is in that way that the skin becomes puffed up, and the tracheotomy-tube displaced. If you take away the connective tissue there is no place for the air to accumulate, and that which escapes will get away by the side of the tube.

Having freed the trachea from the superimposed connective tissue in the middle line, I penetrate it with the point of the same knife I have used all through, inserting it with the cutting-edge upward through the lowest interspace accessible; and now, as it penetrates the trachea, you hear the air escape along the groove in its back. With a sawing movement I continue the incision upward until I have divided three interspaces and two cartilaginous rings. I now withdraw the knife and lay it aside, and at the same time place the nail of my left forefinger between the edges of the incision in the trachea.

Drawing the right lip of the incision a little aside, I am able, without the slightest impediment, to introduce the greased silver canula armed with its catheter-like tube-conductor. You feel the expiratory current of air escaping from the orifice of the pilot-tube, showing you that the tube is in the windpipe. The patient is now raised, and an assistant ties the canula around the neck, in such a manner that the knot shall be at one side. Meanwhile I remove the pilot-tube and insert the inner tube; and now the operation, save for the dressing, is complete.

I occlude the orifice of the canula and ask the patient whether he has had any pain. He tells us, "No; no pain, only at times a sense of pressure."

Now, gentlemen, I hope you will never use a general anæsthetic in the performance of a tracheotomy when you can avoid it. You have had an excellent demonstration of its uselessness, in this case at least.

Before the patient leaves the room, the resident who will have charge of him will introduce two silk sutures above the canula and one below it. He will then place a narrow strip of adhesive plaster between the upper two sutures, and another strip half-way between the lower suture and the inferior angle of the wound. He will then dust the line of incision with powdered iodoform, and will straddle a small fold of gauze upon an additional strip of adhesive plaster and secure it above the wound in such a manner that the apron of gauze shall fall over the canula and the whole line of the wound. This will protect the canula from dust, and the gauze will become so warmed by the expiratory currents of air that the inspired air will be warmed in its turn before it enters the trachea.

After we get the patient in the ward, we shall place a thin layer of wet sponge over the tube so as to moisten the air breathed in. By these methods we shall prevent the broncho-pneumonia or bronchitis which is very common after these operations. If, notwithstanding these precautions, we find symptoms of bronchitis arise, we shall get up some steam in the room and allow it to pass over the tube. A very good way to do this is to place some very hot water in a basin, dip a towel into it, and then hold it on a stick, as I here show you, near to the patient's neck, so that the steam can be drawn in with the breath. This is a very good expedient in cases of tracheotomy performed for croup.

The care of the patient for the first twenty-four hours after the operation is even more important than the care during the operation. The patient's life depends on the integrity of his tube. If the tube gets clogged up he cannot breathe, and therefore we have to have a nurse to attend to the tubes. When the inner tube gets clogged up, it is to be removed and cleaned. We have a double tube, so that the patient breathes through the outer one while the inner one is being cleansed. Every two or three hours the inner tube is to be removed, to see what its condition is, and to be thrown into boiling water and cleansed. If any secretions accumulate meanwhile in the outer tube, the nurse will insert a feather in it while it is in the patient's throat,

and get rid of the secretions by a rotary movement; and then he will replace the inner tube. This supervision of the inner tube will be repeated every two or three hours for the first twenty-four hours, and after that, two or three times a day as long as may be necessary. The dry air will sometimes desiccate the mucus, and form a gummy mass quite difficult to remove. If the nurse should be unable to clear the outer tube so as to replace the inner one, then all he has to do is to take the whole appliance out and hold the wound open with bent hair-pins until the doctor gets to the patient. This is one advantage that tracheotomy has over intubation, the tube of which, much smaller in calibre, gets filled up much more quickly, and requires an expert hand to take it out. If that hand is not present at the critical moment, the patient will suffocate, unless he is lucky enough to expel the tube by cough.

At the end of forty-eight hours we shall place the patient in the same position he occupied during the operation, and replace the original canula with another one, and then we shall change the tube every day or two, so as to take proper care of the tubes and of the wound.

Tracheotomy is not always as easy and as neat an operation as the demonstration you have just witnessed. I have had the advantages of a thin neck, a docile patient, excellent light, choice of time, and skilled assistants. You will usually be called upon to do the operation with less favorable surroundings. Under such circumstances, when time is of great importance to you, and when assistants have not been tried, I should advise you to perform the easier operation of high tracheotomy; and the best method is as follows: Make an incision, two inches long in the adult, beginning at about the middle of the thyroid cartilage. When you have exposed the cricoid cartilage and the isthmus of the thyroid gland, make a horizontal incision as close as you can to the upper border of the cricoid cartilage, and incise the two folds of fascia enveloping the thyroid gland. Insinuate a blunt hook behind the gland and strip it down in its fascial envelope from the cricoid cartilage and the upper rings of the trachea. Then prepare the trachea, and incise the upper two rings and three interspaces. This is practically a bloodless tracheotomy, as bloodless as the exceptionally clean low tracheotomy you have just witnessed; and is known as Bose's method.

Again, you may be compelled to perform a tracheotomy without any assistants other than the people in the house of the patient. Then try this plan: With the forefinger and thumb of your left hand encircle the trachea and push the tips of the terminal phalanges down

until you feel the carotid arteries beating under them. Then, without removing your fingers, make your incisions with the right hand in the middle line until you reach the windpipe. The pressure of the fingers and thumb of the left hand will continually force the windpipe forward and facilitate your manipulations. When the trachea has been reached, you can release the pressure and complete your operation at more leisure under the proper indications. This is Durham's operation.

[*Subsequent History.*—The patient passed the most comfortable night after the operation that he had passed for six months, and in the morning ate the heartiest meal he had eaten for the same period. A few days later, on making a laryngoscopic examination, the epiglottis was found erect, so that there was no difficulty in confirming the observation that had been made under difficulty the day before the tracheotomy. Usually the epiglottis is more depressed after tracheotomy than before. The reverse condition in the present instance is probably due to cessation of some suction effect of the inspiratory current through the occluded larynx, which has ceased to be exercised since the artificial opening was made below it.

On the tenth day a mass of morbid growth the size of the end of a finger was readily removed with forceps under laryngoscopic inspection. This mass was transferred to the pathological department of the hospital for investigation, and was reported to be inflammation-tissue. Similar reports were made of the subsequent masses removed. Nevertheless, the clinical aspects of the case rapidly presented acute tuberculosis with failure of cicatrization of the tissues whence the morbid growths were removed. I must confess that I am at a loss to classify these growths. Macroscopically and laryngoscopically I should have termed them papillomas.]



